PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BC hydro

BRITISH COLUMBIA

Ingenika River Prescribed Burn, 2001

F. B. Corbould
February 2002

PWFWCP Report No. 249

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

Citation: F. B. Corbould. February 2002. Ingenika River prescribed burn, 2001. Peace/Williston Fish and Wildlife Compensation Program. Report No. 249. 8pp plus appendices.

Author(s): Fraser B. Corbould[1]

Address(es): [1] Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave., 3rd Floor Prince George, B.C. V2L 3H9

INTRODUCTION

The lower Ingenika River drainage, characterised by snow depths that rarely exceed 60 cm (Corbould and Martin in prep, PWFWCP unpublished data), has the capability of providing some of the best low-elevation ungulate winter range in the Finlay River drainage. Specifically, the proposed burn area along the Ingenika River has a high habitat capability rating for elk and moose (Ministry of Environment, Lands and Parks unpublished data).

In the early and mid-part of the past century, wildfires in the lower Ingenika River drainage occurred on a relatively regular basis (ca. 15-30 year interval), thereby maintaining much of the south-facing slopes in an early seral community. However, since the 1970s, suppression of wildfires has been an active management tool used by the Ministry of Forests [MoF] in order to conserve merchantable timber within managed forests. Consequently, these historical fire-maintained areas are now advancing into older-aged structural stages, making them less suitable for early seral dependent wildlife species. This is of particular concern in areas such as the Finlay River drainage that provide ungulate winter range in conifer-dominated landscapes.

In 2000, a spring prescribed burn was conducted at the proposed Ingenika River burn site (Corbould 2000). Approximately 75 to 100 ha were burned in patches, mainly aspen-dominated stands within the eastern section (Phase I) of the proposed burn area; patches were up to 20 ha in size, but many were <5 ha. Due to a number of factors, the regenerating lodgepole pine areas (ca. 30 years old) that also had significant volumes of medium-sized downed woody debris from the previous wildfire was not able to be ignited. In order to target the more extensive regenerating pine stands, a fall prescribed burn of the western section (Phase II) of the Ingenika River site was scheduled for 2001.

In September 2001, a prescribed burn was conducted in Phase II. This report documents the prescribed burning activities that occurred in 2001.

AREA DESCRIPTION

The proposed Ingenika prescribed burn site is located along the north shore of the Ingenika River, Williston Reservoir watershed (Figure 1). The site is situated on the south-facing slopes between Ingenika Crag (Grassy Bluff) and Pelly Creek. As a result of prior wildfires in 1955 and 1970, the forest composition of the site consisted of regenerating stands (20-40

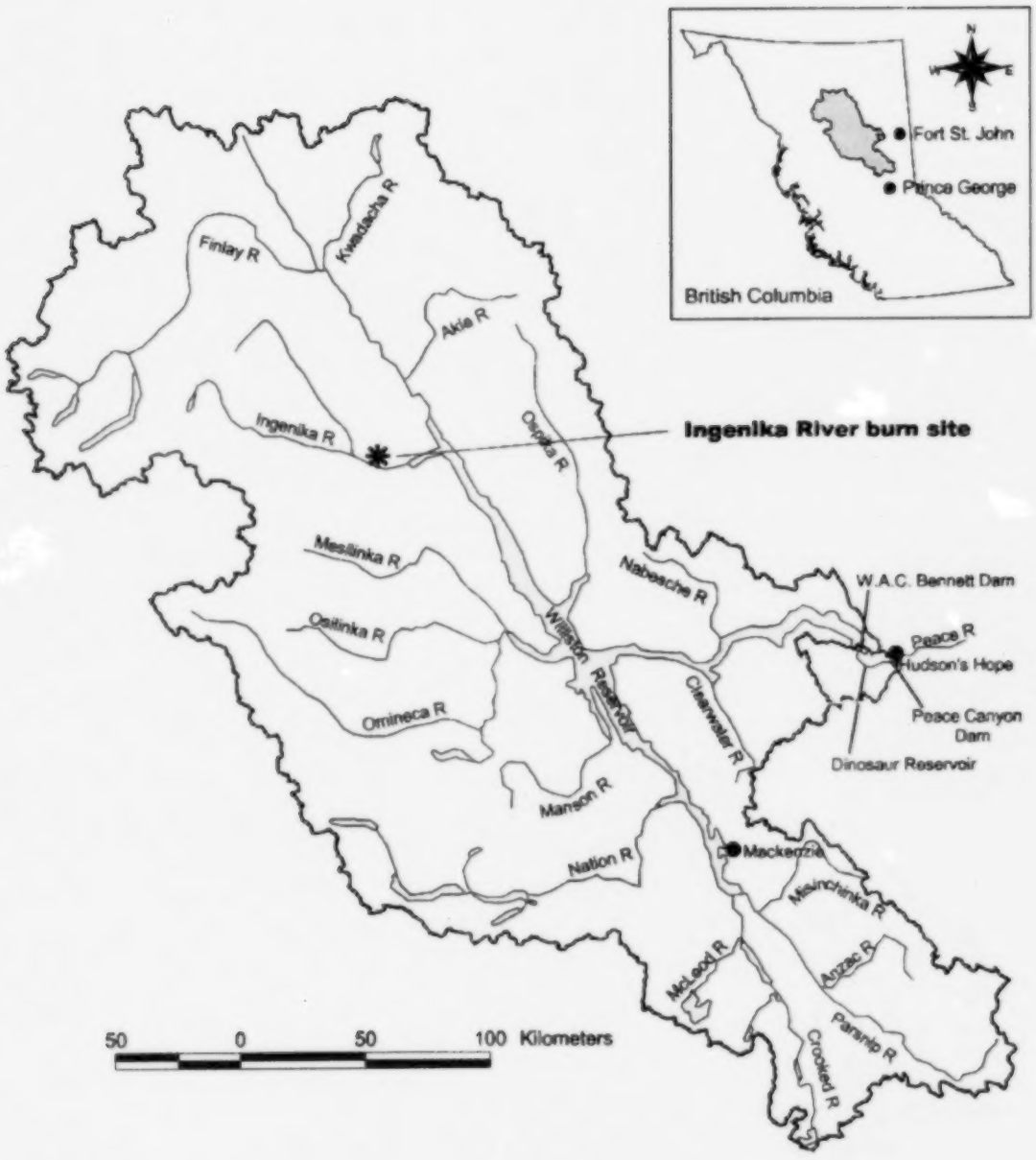

Figure 1. Ingenika River prescribed burn site, Finlay River drainage (Williston Reservoir watershed), fall 2001.

years old) of lodgepole pine (*Pinus contorta contorta*) and trembling aspen (*Populus tremuloides*), with pockets of mature (80 years old and older) lodgepole pine, hybid white spruce (*Picea glauca x engelmannii)*, and trembling aspen (Appendix A). The Ingenika site is located within the dry cool Boreal White and Black Spruce biogeoclimatic subzone (BWBSdk1; MacKinnon et al. 1990), Cassiar Ranges Ecosection (Demarchi 1995), and Mackenzie Forest District [MFD].

The proposed burn area extends from 740 m to 1,260 m in elevation, and has moderate slopes (20-40%) with a few small benches and sporadic intermittent creek draws (Figure 2). Following the creation of a machinery-made fire break around the proposed burn perimeter (13.0 km) in May 2000, the area proposed for burning was reduced to 918 ha in size. To facilitate the controlled burning of discrete units of the proposed burn area (i.e., areas that would be able to be burned at different times or under different conditions), a 3-km fire break was established through its central region, thus creating eastern (Phase I – 524 ha) and western (Phase II – 394 ha) sections. An existing, old logging road acted as a fire break for 4.2 km along the southern boundary of Phase I and part of Phase II. Helicopter landing sites (heliports) were established at numerous locations along the fire break.

Light fuel loading (i.e., primarily leaf litter) was present in the purer aspen stands (mainly Phase I) and moderate to heavy fuel loading was present in areas of pine regeneration (mainly Phase II), due to numerous downed stems from the previous wildfires.

The area targeted for burning in the fall of 2001 was Phase II, in particular the uniform regenerating pine stands along its northern perimeter (approximately 25% of the 394-ha area).

2001 BURN ACTIVITIES

Pre-burn activities were initiated with a visit to the proposed burn site in July 2001 so that Baseline Prescriptions Ltd. -consultant hired to prepare the burn plan and oversee the fall prescribed burn- could become more familiar with the site.

Based on the site visit, revisions were made to the *Range Enhancement Burn Plan (2000)* to reflect the changes in the target area, scheduled ignition timing, and burn indices required to conduct the burn. The revised burn plan was submitted to the Prince George Fire Protection

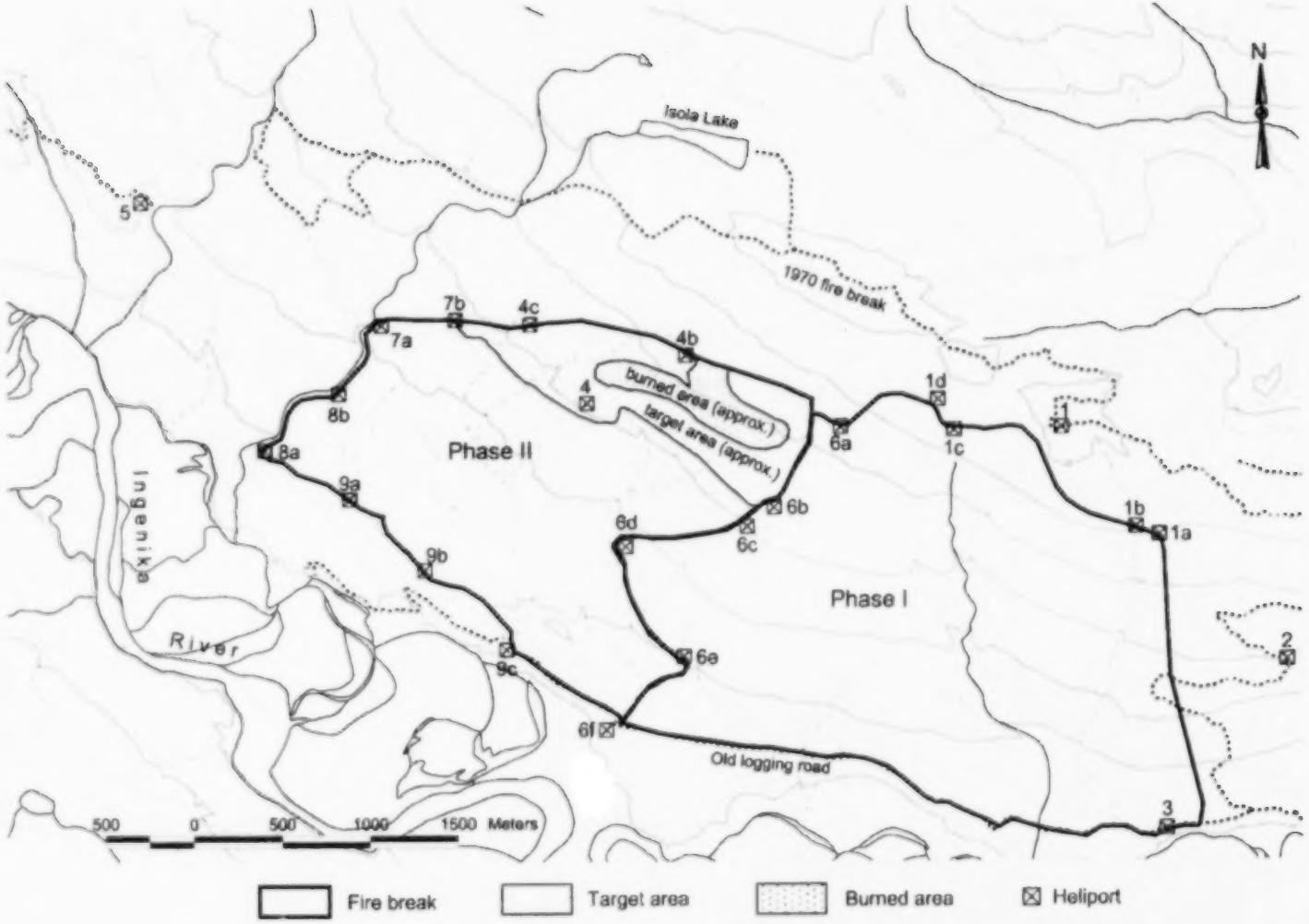

Figure 2. Eastern (Phase I) and western (Phase II) sections of the proposed Ingenika River prescribed burn site. Areas (approximate) targeted and successfully burned in the fall of 2001 are identified.

Centre [PGFPC] for approval (Burning Ref. #R00G2348 [same as 2000 burn]; Appendix A). Dependent on site and weather conditions, the burn was scheduled for mid-August to late September.

MoF's Ingenika and Blackpine weather stations were used to monitor weather conditions and burn indices in the vicinity of the proposed burn area over the summer and early fall; PWFWCP's on-site weather station was not functioning due to substantial damage caused the previous year.

In early fall, plans to proceed with a burn appeared doubtful due to cool and wet weather conditions in late August and early September. However, an extended high pressure ridge of warmer and drier weather in mid-September provided some optimism that the ground conditions required to conduct the burn might be attainable on site.

The ignition date was scheduled for 17 September (mid to late afternoon) as dictated by the 5-day weather forecast examined on 13 September (Appendix A); the high pressure ridge was forecasted to dissolve by 18 September. In order to maximise the effects of the warmer and drier conditions at the site, monitoring of the forthcoming weather was continued but all subsequent forecasts indicated that 17 September would provide the best burning conditions.

Most of the ground preparation activities for Phase II had been conducted in 2000 (e.g., creation of perimeter guard and heliports; Corbould 2000). However, in advance of the burn, snags and trees that posed a potential threat to personnel safety and guard permeability were removed from much of the northern perimeter (between heliport #4c and 6a) by a 4-person falling crew from Tsay Keh Dene. Standing stems at a new heliport (#6d) were also cut down but, due to time constraints, felled stems were not cleared from the site. This 4-person crew, along with a 3-person Baseline Prescriptions Ltd. crew, were also used to move equipment and supplies from the Ingenika Tanker Base to the staging area adjacent to the Ingenika River (Rob Johnson's old homestead). In addition, since they were certified firefighters, they assisted with the burn ignition activities, were available as the initial response crew on the day of the burn, and were part of the stand-by crew for the following day. An additional 8 to 10 certified firefighters from Tsay Keh Dene were also scheduled to be on stand-by at the Swannell airstrip the morning after light-up.

On 16 and 17 September, 12:00-PST weather conditions from the Blackpine and Ingenika weather stations were downloaded by the MFD office and used to update the spot forecasts

for the Ingenika burn site (Appendix B); spot forecasts were provided by the PGFPC. On 17 September, on-site temperature and relative humidity measurements were also taken. Contingent on the above information, a revised ignition time of 13:00 PST was identified due to the forecasted cooler and possibly wetter weather conditions arriving sooner than originally expected.

An aerial drip torch, using a mixture of Jet B fuel and Petro Gel®, was again used to ignite the fire, thus providing an ignition source with the greatest intensity of heat. Ignition of the site was started with the first drum of incinerant at 13:30 PST. The last drum was finished dispensing at 18:40 PST. Nine complete and 2 half-drums were used; each drum took about 15-20 min to dispense.

The fire was started in the northeast corner of Phase II, just upslope of the wet area on the mid-slope bench. By dispensing the incinerant in an outward spiral manner, the beginning of a convection column was created. However, based on the fire behaviour and prevailing winds, a subsequent ignition strategy promoted the fire as a broadcast burn with a western-leading front. Minor problems with the drip-torch operation and the incinerant's viscosity hampered the timely ignition sequence on a couple of occasions, and thus affected the spread of the burn somewhat. Heliport #4, west of the target area, was used as the initial viewing platform to observe the response and progression of the burn; later, a gravel bar along the Ingenika River was used.

Although localised rain showers were observed in the surrounding area, no precipitation fell in the immediate vicinity of the burn site. After ignition attempts had stopped, a reconnaissance flight over the burn site was conducted. Risk of the fire escaping and causing concern was low. Therefore, the stand-by crew for the following day was decreased to 7 people; similarly, a Caterpillar 527 tractor that was on stand-by at Ted Browne Camp was also released.

The burn site was inspected early on the morning of 18 September. Within the guarded perimeter of Phase II, some small localised sites were still burning (hot-spots) around the periphery of the ignited area but no sizeable hot-spots were present. The fire had traversed the guard at a couple of locations along the northern perimeter (east of heliport #4b), but these affected areas were small (<0.2 ha) and caused no concern as they abutted a wet area. A second ignition attempt was planned for the early afternoon of 18 September, however, a localised weather system passed through the area at 11:40 PST and dropped sufficient precipitation to negate any further burn activities. A subsequent post-burn visit to the site

was conducted on 22 September; no hot-spots or smoke were observed, thus no mop-up activities were required.

An estimated 25 ha of the contiguous regenerating pine stand was burned, between heliport #4 and the Phase I-II divide (Figure 2); no formal mapping or traversing of the burn area has been conducted. Within this area, the burn objectives -removal of regenerating pine and consumption of elevated, medium-sized downed woody debris- were achieved. Although not all the downed wood was consumed, the remaining volume will drop to the ground and decay at a much faster rate. A number of smaller patches (<0.5 ha; about 2-4 ha total) were also burned within the target area, with varied success. In the future, subsequent burning of the recently burned areas will possibly be needed within the next 5 or so years in order to remove the fallen stems.

No scheduled post-burn vegetation or wildlife use monitoring will be conducted as only 1 pre-treatment site was situated within Phase II and it was not affected by the burn.

Expenditures (excluding PWFWCP and MoF wages) relating to the preparation and ignition activities for the 2001 burn totalled $33,360. Contingency funding was applied for and received from the Habitat Conservation Trust Fund, but no mop-up activities or expenditures were warranted. Since 1996, $122,694 has now been spent on the Ingenika Prescribed Burn Project (Corbould 2000). Thus, each hectare burned at the site has cost an average of about $1,000.

ACKNOWLEDGEMENTS

I would like to thank the Ministry of Forests (Fire Protection Centre, Prince George), particularly Dennis Nesbit, for providing their expertise in assisting with the planning and execution of the prescribed burn, and for making their fire suppression equipment available lest fire mop-up activities were needed. Thanks also to Brian Bissett (MoF, Mackenzie Forest District) for relaying the Ingenika and Blackpine weather station information to the field personnel. I am also very appreciative of Williston Lake Air (Mackenzie) who graciously conducted an aerial assessment of the burn site in my absence in order to identify any smoke or hot-spots, which there were none.

Contractors involved with the preparation for and execution of the burn were Tsay Keh Dene (Leo Hunter, George Davies, Steve Felker, Greg Taylor, Johnny Pierre, and Russell Tomah), Baseline Prescriptions Ltd. (John Muraro, Craig Waldner, Bryan Keim, and Ken Ross), Altoft Helicopters Services (Greg Altoft), and Yellowhead Helicopters (Kevin McCormick).

REFERENCES

Corbould, F.B. 2000. Ingenika River prescribed burn, 2000. Peace/Williston Fish and Wildlife Compensation Program, Report No. 234. 10pp plus appendices.

Demarchi, D.A. 1995. Ecoregions of British Columbia, 4th edition. British Columbia Ministry of Environment, Lands and Parks, Victoria, B.C.

MacKinnon, A., C. DeLong, and D. Meidinger. 1990. A field guide for identification and interpretation of ecosystems of the northwest portion of the Prince George Forest Region. Land Management Handbook No. 21. BC Ministry of Forests, Victoria, B.C. 116 pp.

Appendix A: Range enhancement burn plan: Ingenika burn 2001.

Range Enhancement Burn Plan

Burning Reference Number: R00G2348 (completed by Forest Official)

Burning conducted in this Burn Plan is a planned land management objective approved by the Forest District Manager.

Plan name and/or number: Ingenika Burn (PW2000-1)

Burn Plan Applicant: Ministry of Water, Land and Air Protection
BC Environment (Peace/Williston Fish & Wildlife Comp. Prog.) **Phone #:** (250) 565-6856

Address: 1011 Fourth Ave., 3rd Floor, Prince George, BC V2L 3H9

Geographic Location of Burn Area: North side of Ingenika River (west of Grassy Bluff)

Latitude: 56° 43' **Longitude:** 125° 15'

Aspect: SW **Slope** (%): 20-40% **Size** (ha): 918 ha (Phase I: 524 ha, Phase II: 394 ha)

Topography: (check one) **Flat:** _____ **Gently Rolling:** _____ **Steep:** X

Fuel Type & Main Plant Communities *(What vegetation will be burnt? i.e. grasses and willow shrubs, aspen 3 m tall with grass on forest floor.)*

Regenerating stands of aspen and pine (A 322 and PLA 110), with pockets of mature pine, aspen and some spruce (PLAS 633 and PLS 633). Wildfire burn occurred in 1970. Sidehill with small benches and intermittent creek draws. The specific objective of the August 2001 treatment is to eliminate the 30 year old pine and windthrown remnants of the mature stand destroyed in the 1970 burn.

Light loading in areas of pure aspen stands (mainly Phase I), and moderate (to heavy) fuel loading in areas of pine regeneration due to downed debris from 1970 wildfire (mainly Phase II).

Fuel Loading: (check one) **Light** Phase I **Moderate** Phase II **Heavy** Phase II

Reason for Burn and Burn Objectives: *(i.e. light intensity burn to clear matted grass, moderate intensity burn to kill suckering aspen and shrubs, hot intensity burn to reduce slash)*

Our objective is to convert approximately 30-70% of the area into an early seral, grass/shrubland community. The resultant mosaic of habitats will benefit a number of early seral dependent species, including moose and a herd of transplanted Rocky Mountain elk that the PWFWCP released in Feb/96. The initial conversion of the present forest community to a grass/shrubland community; however, may take more than one burning attempt. If this situation occurs, this burn will help to create small openings, which will assist with subsequent burns. The BGC unit of the area is BWSdk1 with associations ranging from predominantly 03 to 04 with minor occurrences of 05 in wetter microsites. The August 2001 burn will target area II, ie the western block as the priority area for treatment. This area contains the largest contiguous stands of 30 year old lodgepole pine dating from the 1970 wildfire. These stands average an estimated 15000-20000 sph with an average dominant height of 5 metres; live crowns are within 1.5 to 2.0 metres of the ground. Organic layers average from 4 to 10 cm with surface vegetation of kinnikinnick, soopolallie, bearberry and cornus. Ground fuels consisting of downed remnants of the mature pine stand average about 50 tonnes/ha with a depth of 80 cm. Energy availability is about 50% due to decomposition of the large fuels. Cones are moderately numerous (10-30 per tree) on the 30 year pine, most of which are within easy range for combustion in a Rank 3-4 fire. The majority of these cones are non-serotinous non-the-less their involvement in the flame zone will eliminate the majority of pine reproductive capacity. As a result the succeeding stand will be widely spaced pines and abundant aspen except where reinforced by seed from the remaining vets. The forest floor will be relatively clear due to the elimination of the large fuel remnants of the 1970 burn.

Parties to Notify: *(i.e. adjacent land or tenure holders, fire departments, Ministry Transportation and Highways, Flight Services at airports, oil & gas industry, BC Hydro, Forest Industry, First Nations)*

1. **Prince George Fire Center immediately prior to ignition: 250-565-6126 (1-800-565-1557, office hours only)**
2. **Tsay Keh Dene: 250-993-2100 – 1 or more days before burn**
3. **Rob Johnson: 250-997-5928 (after beep 7667) – 1 or more days before burn**
4. **Williston Lake Air: 250-997-5557 – 1 or more days before burn**
5. **NT Air: 250-997-3247 – 1 or more days before burn**

Values at Risk: *(What is at risk if this fire escapes? i.e. range improvements, private or crown forest, neighbouring improvements, oil & gas facilities, hydro line)*

The proposed burn area is entirely on Crown lands. Areas with timber value, identified by the Mackenzie Forest District, are situated along the northern boundary of the targeted burn area; particularly along the northern perimeter of Phase II.

/ John Muraro – Baseline Prescriptions Ltd. 250-562-9458

Burn Supervisor: Glen Watts (BCE) / Fraser Corbould (PWFWCP) **Phone Number:** 250-565-6426 / 250-565-6856

Anticipated Date and Time of Ignition: Aug. 10 to Sept 30 2001 with ignition occurring between 1600 & 2000 hr Local Time

Reference Weather Station: Ingenika PT, # 1205 3.5 km East of Burn Area and Blackpine, # 1208 +/- 20 km SW of Burn Area (completed by Forest Official)

Maximum Wind Speed at Time of Ignition: 10 **(km/hr)**

Site Preparation Prior to Burning: *(What will be done to the site to prevent escapes prior to igniting the main area? i.e. hand burn 5 m wide fuel break along the east and north perimeters, extinguish fire as we progress. Show on the attached map)*

A mechanical (e.g., D5 cat with blade) fuel break will be established along the eastern, northern and western flanks of the targeted burn area; existing roads along the southern boundary will be used as much as possible as a break. Also, a similar mechanical break separates the eastern (Phase I) and western (Phase II) sections of the targeted burn area; thus providing an opportunity to burn these areas at different times. Areas of concern along the perimeter of phase 1 may be black-lined prior to the main areas being burned. Heli-pads have been established at intervals along the mechanical fuel breaks (cat guard). Further preparation in advance of the burn requires the felling of danger trees along the guard where personnel will be moving. This entails falling both living and dead trees on the inside of the guard that are capable of reaching the guard. Similarly, dead trees and strongly leaning living trees on the outside of the guard are to be felled. These measures are required by WCB regulations, as well as a fire control measure. Concurrent with snagging, windthrown trees across the guard will be bucked and distributed outside the guard.

Areas to be Protected:*(Areas that you or others do not want burnt. Show on attached map)*

No specific areas within the targeted burn area are to be protected. Efforts will be made, however, to reduce chances that fire will affect stands of mature timber outside (but adjacent to) the northern perimeter of the targeted burn area [see *Mop-up Objectives* below].

Fire Suppression Resources at Burn Area for Ignition and Control: *(Number of adult persons and fire suppression equipment at burn area to prevent an escape)*

On-site ignition resources: **1** supervisor, **4** crew people, **5** hand tools, **1** Mark III pump, **1000** ft $1^1/_2$" and **500** ft $^5/_8$" hose, **2** hand tank pumps, **5** hand-held drip torches, and **1** 206B helicopter (with bambi bucket)

Maximum resources (includes above resources): **2** supervisors, **13** crew people, **15** hand tools, **4** Mark III and **2** GP25 (or equivalent) pumps, **6000** ft $1^1/_2$" and **1000** ft $^5/_8$" hose, **5** hand tank pumps, **5** hand-held drip torches, **2** 60 gal stillwells, **1** 1500 gal relay tank, **1** D5 cat (or equivalent) bulldozer, and **1** 206B helicopter (with bambi bucket and aerial drip torch)

Ignition and Control Plan: *(Method of ignition and contingency plan to control the fire in event of an escape. Show on attached map)*

a) Weather conditions:
Fire weather indices required to achieve the objectives of this prescribed burn are as follows to provide rank 3, 4 or 5 behaviour in the immature pine type – fuel type C-4 indices values are presented within an array of wind and FFMC (Fine Fuel Moisture Code) to provide choices of ISI (Initial Spread Index) as follows:

	FFMC →				
	86	**87**	**88**	**89**	**90**
Wind of 5 kmh = ISI of	3	4	4	<u>5</u>	6
8 kmh = ISI of	4	4	<u>5</u>	6	6

and an array of BUI (Buildup Indexes) as a function of DMC (Duff Moisture Code) and DC (Drouht Code) as follows:

	DMC		
	30	**35**	**40**
DC of 225 = BUI	44	41	<u>58</u>
300 = BUI	47	<u>55</u>	62

Any combination of the ISI range of 4 or 5 with the range of BUI from 44 to 62 will yield the required intensity ranks of 3 or 4 (500-4000 KW/Min) with spread rates of 4 to 5 metres/min. The most desirable indice values are underlined.

b) Ignition Patterns:
Because of the fuel concentration along the northern cat guard of the phase II area, black lining is not recommended except if a strong downslope wind or a northern ambient flow is present. In this case ignition will be initiated along the northern guard of the phase II area. If the circulation involves a NW direction ignition will be initiated in the vicinity of heliport 7A progressing eastward to heliport 6B. If the circulation involves a NE component, initiation will be from heliport 6B progressing to 7A. After the initial ignition the fire will be allowed to burn downslope aided by intermittent loops of ignition that parallel the fire front (Fig 1). Note the spacing, ie distance between ignition loops, is variable and dependant on fire development. The general rule being that resulting intensity will be inversely dependent on ignition spacing. In the event of any tendency of the fire to roll downslope further ignition will either be halted or a poked pattern will be initiated using the established fire as a hub with lines of fire radiating to the south boundary.

An alternate ignition pattern initiated in the event of calm stable conditions will involve a convection column in the NE corner bracketed by heliports 4, 46, 6A and 6C, Fig. 2. The second phase will then involve lighting the north and east perimeters from heliports 6A to 4C and from 6A to 6D on the mid east perimeter. The third and final phase will then involve using the convection column as a hub with ignition lines radiating to the west and east perimeters. The final phase will then involve tidying up perimeters and dealing with the area bounded by heliports 6D, 6E and 9C and the remainder of the south boundary.

c) Control
A second 206B – with additional bucket and drip torch will be on site to act as backup for the first machine, to function as an observation and documentation platform and to conduct initial attack on bucketing opportunities. Sources of water for bucketing include Isola Lake for the north guard and the Ingenika River for their lower extremities.
A mop-up crew (min. 5 people) will be on standby at the Swannell airstrip on the day of light-up should any initial problems arise. The morning after the main light-up, an additional 10-person crew will be ready on standby at the Swannell airstrip to initiate any mop-up duties, should they be required. Should water pumps be required, pumps may be stationed at a number of locations: the small wetland along the north-eastern boundary, Isola Lake, the creek west of Phase II (near pad #5), or at sites along the Ingenika River. Mobile stillwell and relay tanks will also be available to be stationed at strategic locations where needed.

Patrol and Mop-up Objectives: *(Identify your plans to patrol and extinguish the fire, and the resources you will have on the burn area.)*

Mop-Up: **BCE/PWFWCP will be responsible for mop-up and control activities within the area (AoR) confined by the Ingenika River (south), the old cat trail (east and north), and the west ridge of the creek draw near heli-pad #5 (west) [see attached map]. Once the burn has extended anywhere outside the above identified AoR boundaries, the burn is considered to be 'escaped' and is the responsibility of the Ministry of Forests.** Areas outside the targeted burn area (ie, area bounded by new cat guard) but still within the AoR will be left to burn themselves out unless the situation indicates that the AoR perimeter is threatened. Hot spots within 30 m of the targeted burn area perimeter will be extinguished.

Patrol: an aerial patrol of the burn perimeter will be conducted at least twice (eg, morning and mid-afternoon) on the day after main ignition; subsequent aerial patrols will be conducted as needed to properly monitor the site. IR scanning, using BCFS personnel and equipment, will be conducted within 14 days of ignition, or earlier should conditions be suitable.

All fires will be extinguished within 14 days after ignition.

Additional Resources in Event of Fire Escape: (*In addition to those available during ignition and control, list the number of adult persons, fire suppression equipment and other resources or equipment which the person responsible will provide at their expense)*

The Ministry of Forests is responsible for any persons, equipment and other resources should there be a fire escape.

Additional Conditions:

The proposed burn area is designated as a Category B area (Waste Management Act: Open Burning Smoke Control Regulation). Burn ignition will be limited to periods when the ventilation index (VI) is expected to be or is greater than 35.

Conditions attached: **Yes** ____ **Number of Pages:** ____ **No:** X
Map(s) Attached: **Number of Pages:** 2

Total Number of Pages Included in Burn Plan: 5

Forest District Referred: **Yes** ____ **No:** ____ (completed by Forest Official)

Burn Plan Applicant Fraser Corbould **Signature:** ____
Position: Wildlife Biologist (PWFWCP) **Date:** ____

Burn Plan Approved By: ____ **Signature**: ____
Position: ____ **Date**: ____

Appendix B: Weather readings and forecasts for the Ministry of Forests' Ingenika Point and Blackpine weather stations, spot forecasts for the proposed Ingenika burn site, and sporadic on-site weather measurements, 17 and 18 September, 2001.

Ingenika Point (13-Sep-01)

			Temp.	RH	Wind			Burning Indices						
Date	Time	Status	(C)	(%)	Dir.	Spd	Ppt	FFMC	DMC	DC	ISI	BUI	FWI	Dgr.
1-Sep-01	12:00 PST	Actual	10.9	51	237	18	0.3	73.8	5	214	1.8	10	1.6	2
2-Sep-01	12:00 PST	Actual	10.9	53	102	13	0.3	81.1	6	218	2.5	12	2.9	2
3-Sep-01	12:00 PST	Actual	8.5	87	59	10	4.2	45.3	3	214	0.1	7	0	1
4-Sep-01	12:00 PST	Actual	10.8	60	198	0	0	57.3	4	218	0.3	9	0.1	1
5-Sep-01	12:00 PST	Actual	9.2	67	175	7	0	69.4	5	221	0.9	10	0.5	1
6-Sep-01	12:00 PST	Actual	7.5	73	137	15	1.6	65.4	5	224	1.1	9	0.6	1
7-Sep-01	12:00 PST	Actual	8.2	63	22	18	0	75.7	5	227	2.0	10	1.8	2
8-Sep-01	12:00 PST	Actual	9.5	34	108	30	0	85.1	7	231	10.0	13	11.4	2
9-Sep-01	12:00 PST	Actual	6.3	61	214	20	0	84.9	7	233	5.8	13	7.5	2
10-Sep-01	12:00 PST	Actual	8.3	62	239	2	0.5	84.9	8	237	2.3	15	3	2
11-Sep-01	12:00 PST	Actual	8.0	47	40	12	0	85.6	9	240	4.3	16	6.2	2
12-Sep-01	12:00 PST	Actual	7.8	70	118	13	0	84.1	9	243	3.6	17	5.4	2
13-Sep-01	12:00 PST	Actual	13.6	61	61	9	0	84.3	10	247	3.0	19	4.7	2
14-Sep-01	12:00 PST	Forecast	16.0	40	120	6	0	87.2	12	252	3.9	21	6.7	2
15-Sep-01	12:00 PST	Forecast	16.0	40	120	6	0	88.1	14	256	4.4	24	8.1	3
16-Sep-01	12:00 PST	Forecast	14.0	55	300	12	0	87.4	15	260	5.4	26	9.9	3
17-Sep-01	12:00 PST	Forecast	14.0	47	300	7	0	87.4	16	265	4.2	29	8.4	3

Ingenika Point (daily)

			Temp.	RH	Wind			Burning Indices						
Date	Time	Status	(C)	(%)	Dir.	Spd	Ppt	FFMC	DMC	DC	ISI	BUI	FWI	Dgr.
17-Sep-01	12:00 PST	Actual	16.7	51	25	5	0	86.3	16	265	3.3	27	6.7	2
18-Sep-01	12:00 PST	Actual	11.2	82	111	4	1.6	68.8	15	269	0.7	27	0.8	2
19-Sep-01	12:00 PST	Actual	8.8	67	78	6	0	75.3	16	272	1.0	28	1.6	2

Blackpine (daily)

			Temp.	RH	Wind			Burning Indices						
Date	Time	Status	(C)	(%)	Dir.	Spd	Ppt	FFMC	DMC	DC	ISI	BUI	FWI	Dgr.
17-Sep-01	12:00 PST	Actual	18.8	37	81	9	0	90.4	30	342	7.2	49	17.4	4
18-Sep-01	12:00 PST	Actual	9.8	64	307	14	0	86.5	30	346	5.5	50	14.4	3
19-Sep-01	12:00 PST	Actual	8.5	62	236	15	0.3	85.4	31	349	4.7	51	13	3

Ingenika Point (hourly)

Date	Time	Status	Temp. (C)	RH (%)	Wind Dir.	Wind Spd	Ppt
17-Sep-01	01:00 PST		11.0	59	39	0	0
	02:00 PST		10.6	61	39	0	0
	03:00 PST		9.5	67	38	4	0
	04:00 PST		9.0	71	22	12	0
	05:00 PST		8.8	68	15	7	0
	06:00 PST		8.0	78	9	6	0
	07:00 PST		7.5	79	9	10	0
	08:00 PST		8.1	77	344	8	0
	09:00 PST		8.8	77	323	10	0
	10:00 PST		11.5	67	250	1	0
	11:00 PST		13.1	63	57	5	0
	12:00 PST		16.7	51	25	5	0
	13:00 PST		19.0	47	99	11	0
	14:00 PST		16.7	51	108	17	0
	15:00 PST		16.4	45	41	24	0
	16:00 PST		15.7	50	143	18	0
	17:00 PST		15.8	52	80	12	0
	18:00 PST		13.5	66	111	23	0.8
	19:00 PST		13.1	69	237	9	0
	20:00 PST		12.5	74	135	4	0
	21:00 PST		12.3	76	245	7	0
	22:00 PST		12.2	78	203	18	0
	23:00 PST		11.2	86	39	12	0
	24:00 PST		10.8	89	63	10	0
18-Sep-01	01:00 PST		11.3	82	60	7	0
	02:00 PST		10.7	83	61	0	0
	03:00 PST		9.8	91	60	8	0
	04:00 PST		9.4	96	57	8	0
	05:00 PST		9.8	82	62	11	0
	06:00 PST		9.0	84	350	9	0
	07:00 PST		9.1	85	78	13	0
	08:00 PST		9.2	84	228	11	0
	09:00 PST		9.7	80	178	12	0
	10:00 PST		9.8	81	193	20	0
	11:00 PST		11.6	76	146	4	0
	12:00 PST		11.2	82	111	4	0.8

On-site (using belt weather kits)

Date	Location	Time (PST)	Temp (C) Wet	Temp (C) Dry	RH (%)	Wind Max (km/h)	Wind Avg (km/h)	Wind Direction	Comments
16-Sep	Heliport #4b	13:45	14.0	20.0	50	10	7	SSE (variable)	
		15:00	14.5	20.5	51	12	7	S (variable)	
		17:00	14.0	21.0	45	8	4	SSE (variable)	
		18:00	11.0	16.0	54	2	0	E	
17-Sep	Heliport #6c	11:30	12.0	17.0	55	8	2	S (variable)	
		11:50	13.0	18.0	55				
	Heliport #4b	13:00							12% moisture on lgr decaying fuel
18-Sep	Heliport #4b	11:30	7.0	9.0	100				started raining at 11:40 PST

SPOT FORECASTS (Ingenika burn site):

DATE: **September 17, 2001**
FORECAST FOR: lat 56 43 long 125 15
LOCATION: PWFWCP Ingenika burn site
Elevation: 2600 ft Slope: Aspect: valley and lower sidehill

SYNOPSIS: The upper ridge of the past few days will weaken today as an upper low from the Gulf of Alaska moves to northwest BC by Tuesday morning. This change will produce cooling aloft and increasing instability over the area tonight. The combination of this and tightening pressure gradients should lead to gusty winds tonight.

FORECAST:
Today - Sunny with increasing cloud during the afternoon. Winds light this morning increasing to southerly 15-20 km/h this afternoon. Max temp upper teens. Min RH 55%.
Tonight - Cloudy. Scattered showers developing overnight. Winds westerly 20 km/h with brief gusts to 30 km/h. Max RH 80%. Low temp near 5 C.
Tomorrow - Cloudy with scattered showers and cooler. Wind westerly 20-30 km/h. Max temp low teens. Min RH 60%.

SPOT FORECAST (@ 08:00 hr PST)

Date	Time (PST)	Temp (C)	RH (%)	Wind (km/h)	POP (%)
Sept 17	13:00	16	50	S-SE 15	20
	16:00	15	55	SW 20	30

Nearest representative weather station: Ingenika Point (DMC – 16, DC – 266, BUI – 29)

SPOT FORECAST (@ 11:00 hr PST)

Date	Time (PST)	Temp (C)	RH (%)	Wind (km/h)	POP (%)
Sept 17	13:00	20	45	S-SE 15	20
	14:00	19	45-50	S-SE 15	20-30
	16:00	18	45-50	SW 20	30

DATE: **September 18, 2001**
FORECAST FOR: lat 56 43 long 125 15
LOCATION: PWFWCP Ingenika burn site
Elevation: 2600 ft Slope: Aspect: valley and lower sidehill

SYNOPSIS: An upper trough over northern BC will continue over the next few days. To the south of this trough there will be a westerly flow of scattered showers at times. By the end of the week a new disturbance will develop over the Gulf of Alaska and spread cloud and rain to the north coast by late Friday. The system will spread thicker cloud and occasional rain into inland areas Friday night and on Saturday.

FORECAST:
Today - Cloudy with sunny periods. Chance of an afternoon shower. Max temp mid teens. Min RH 45-50%.
Tonight - Cloudy with clear breaks. Isolated evening showers. Winds decreasing overnight but gusty at times. Prevailing direction westerly. Low near 4C. Max RH 90%.
Thursday - Cloudy with sunny periods. Scattered showers. Gusty westerly winds in the afternoon. Highs low to mid teens. Min RH 50%.
Friday - A few morning showers. Increasing mid and high cloud later in the day. Winds increasing to southerly 20-30 km/h by late afternoon. Max temp low to mid teens. Min RH 50%.
Saturday - Periods of rain.